CS425 – DATABASE ORGANIZATION

PROJECT PHASE 1 – ENTITY RELATIONSHIP DIAGRAM

Team Members

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INTRODUCTION

Our project endeavors to develop a sophisticated web application integrated with a comprehensive database system tailored for managing Mortgage Management System (MMS) operations. The database consists of 6 tables:

- Customers
- Loan
- Bank
- Employee
- Payments
- Property

TABLES

Customers:

This table consists of 6 columns –

- **CustomerID**: This is the primary key of the table, uniquely identifying each customer record.
- **FirstName**: This field stores the first name of the customer.
- **LastName**: This field stores the last name of the customer.
- Address: This field stores the address of the customer.
- **Email**: This field stores the email address of the customer.
- **Phone**: This field stores the phone number of the customer.

Loan:

This table consists of 9 columns-

- **LoanID** - This is the primary key of the table, uniquely identifying each loan record. It serves as the primary means of identifying loans.
- **CustomerID** - This field represents a foreign key constraint linking to the Customer table.
- **ApprovalDate** - This field stores the date when the loan was approved.
- Amount - This field stores the amount of the loan.
- **InterestRate** - This field stores the interest rate associated with the loan.
- Duration - This field stores the duration of the loan in months.
- **PropertyID** - This field represents a foreign key constraint linking to the Property table.
- **BankID** - This field represents a foreign key constraint linking to the Bank table.
- **EmployeeID** - This field represents a foreign key constraint linking to the Employee table.

Bank:

This table consists of 3 columns-

- **BankID** - This is the primary key of the table, uniquely identifying each bank record. It serves as the primary means of identifying banks.
- **Name** - This field stores the name of the bank.
- **Location** - This field stores the location of the bank.

Employee:

This table consists of 6 columns-

- **EmployeeID** - This is the primary key of the table, uniquely identifying each employee record. It serves as the primary means of identifying employees.
- **FirstName**- This field stores the first name of the employee.
- **LastName** - This field stores the last name of the employee.
- **Position** - This field stores the position or job title of the employee.
- **Salary** - This field stores the salary of the employee.
- **BankID** - This field represents a foreign key constraint linking to the Bank table, ensuring referential integrity between employees and banks.

Property:

This table consists of 4 columns-

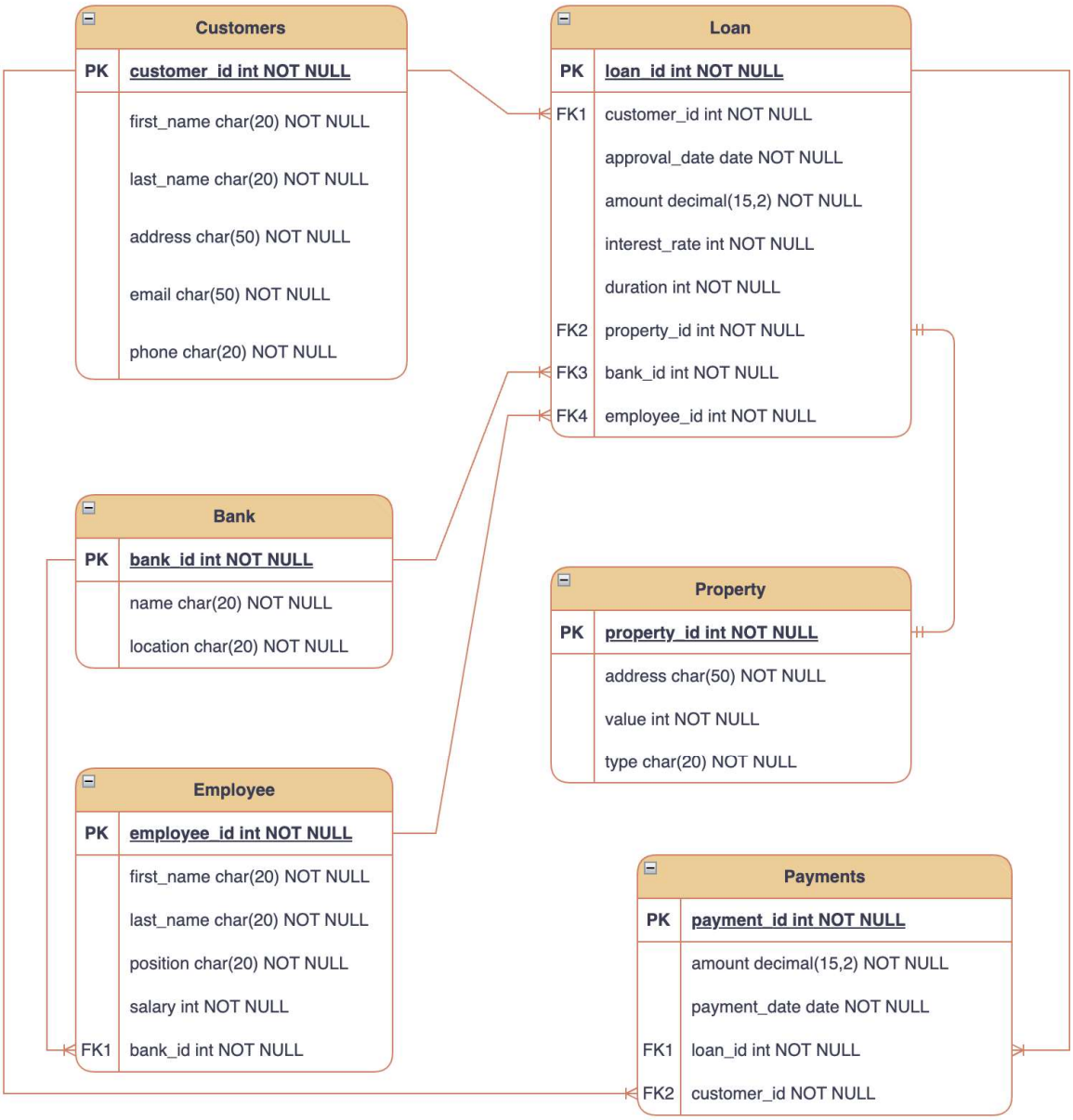
- **PropertyID** - This is the primary key of the table, uniquely identifying each property record. It serves as the primary means of identifying properties.
- **Address** - This field stores the address of the property.
- **Value** - This field stores the value of the property.
- **Type** - This field stores the type or category of the property.

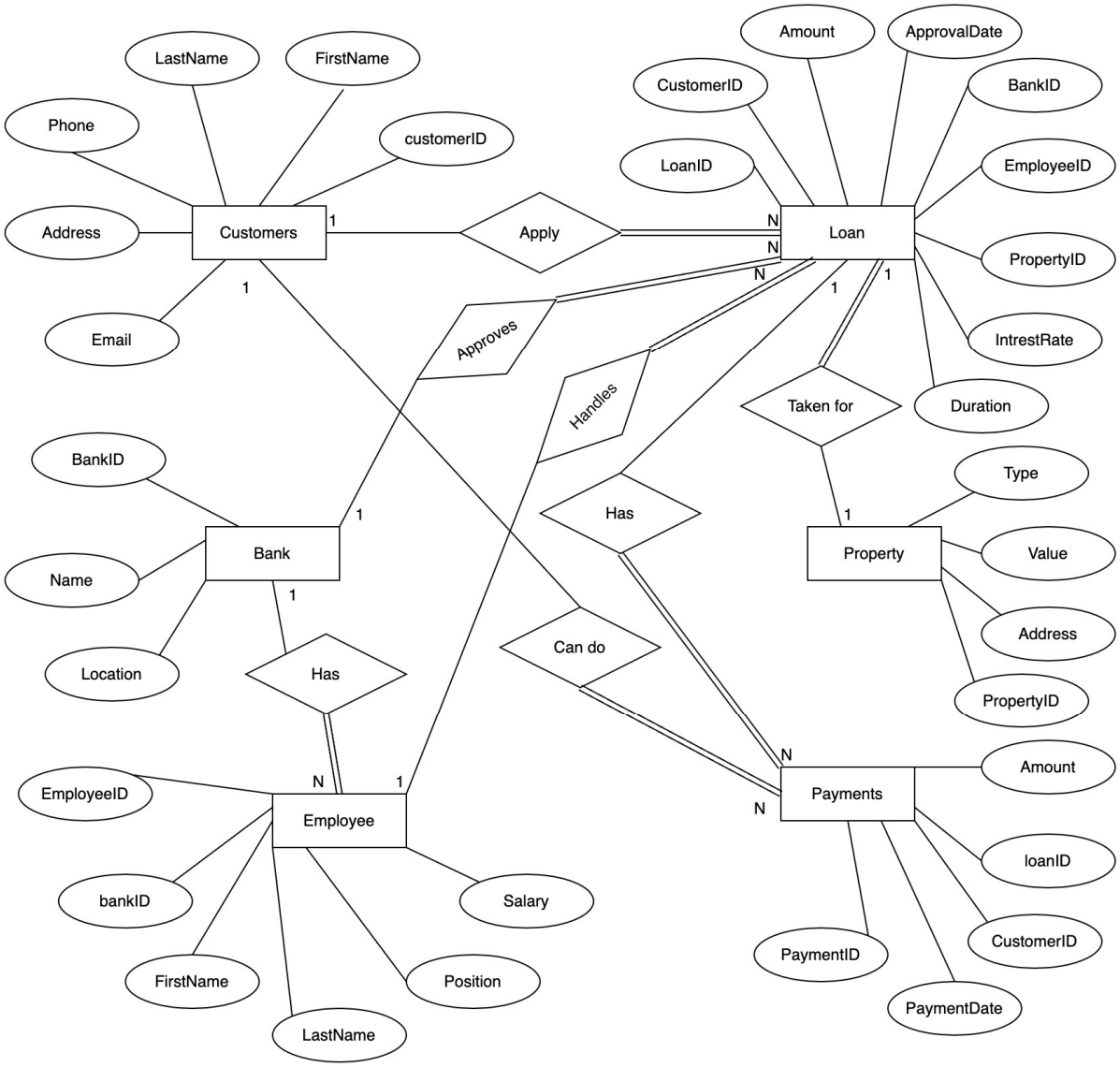
Payments:

This table consists of 5 columns-

- **PaymentID**: This is the primary key of the table, uniquely identifying each payment record. It serves as the primary means of identifying payments.
- **Amount**: This field stores the amount of the payment.
- **PaymentDate**: This field stores the date when the payment was made.
- **LoanID**: This field represents a foreign key constraint linking to the Loan table.
- **CustomerID**: This field represents a foreign key constraint linking to the Customer table.

ER DIAGRAM:


Customers
PK customer_id int NOT NULL
first_name char(20) NOT NULL
last_name char(20) NOT NULL
address char(50) NOT NULL
email char(50) NOT NULL
phone char(20) NOT NULL
Loan
PK loan_id int NOT NULL
FK1 customer_id int NOT NULL
approval_date date NOT NULL
amount decimal(15,2) NOT NULL
interest_rate int NOT NULL
duration int NOT NULL
FK2 property_id int NOT NULL
FK3 bank_id int NOT NULL
FK4 employee_id int NOT NULL
Bank
PK bank_id int NOT NULL
name char(20) NOT NULL
location char(20) NOT NULL
Property
PK property_id int NOT NULL
address char(50) NOT NULL
value int NOT NULL
type char(20) NOT NULL
Employee
PK employee_id int NOT NULL
first_name char(20) NOT NULL
last_name char(20) NOT NULL
position char(20) NOT NULL
salary int NOT NULL
FK1 bank_id int NOT NULL
Payments
PK payment_id int NOT NULL
amount decimal(15,2) NOT NULL
payment_date date NOT NULL
FK1 loan_id int NOT NULL
FK2 customer_id NOT NULL


LastName
FirstName
Phone
customerID
Address
Customers
1
Apply
N
Loan
N
1
Email
Approves
N
Handles
1
1
Taken for
Duration
Amount
ApprovalDate
CustomerID
BankID
LoanID
EmployeeID
PropertyID
IntrestRate
BankID
Bank
1
Name
1
Location
Has
Has
1
Type
Property
Value
Address
PropertyID
Can do
N
Payments
N
Amount
loanID
CustomerID
PaymentDate
PaymentID
EmployeeID
N
1
Employee
bankID
FirstName
LastName
Position
Salary

BUSINESS RULES:

One-To-Many Relationships Between Customer and Loan:

- One Customer can have multiple loan.
- Each loan is associated with only one customer.

One-To-Many Relation Between Customer and Payments:

- One Customer can make multiple payments.
- Each payment is associated with only one customer.

One-To-Many Relation Between Loan and Payments:

- One Loan can have multiple payments.
- Each payment is associated with only one Loan.

One-To-Many Relation Between Bank and Loan:

- One Bank can approve multiple Loans.
- Each Loan is approved by one bank.

One-To-Many Relation Between Employee and Loan:

- One Employee can handle multiple Loans.
- Each Loan is handled by one Employee.

One-To-Many Relation Between Bank and Employee:

- One Bank can have multiple Employees.
- One Employee is from one Bank.

One-To-One Relation Between Property and Loan:

- One property is given one Loan.
- One Loan is given to One Property